

## REMARKS/ARGUMENTS

The Final Office Action mailed December 14, 2004 has been carefully considered. Reconsideration in view of the following remarks is respectfully requested.

### Claim Status and Amendment to the Claims

Claims 1-13 are now pending. No claims stand allowed.

Claims 1-2 and 7-8 have been amended to further particularly point out and distinctly claim subject matter regarded as the invention. The amendment also contains minor changes of a clerical nature.

The text of claims 3-6 is unchanged, but their meaning is changed because they depend from amended claims.

New claims 9-13 have been added, which also particularly point out and distinctly claim subject matter regarded as the invention. Support for these claims may be found in the specification, page 7, lines 4-5, page 10, lines 29-31, page 11, line 29 through page 12, line 2, and page 12, lines 17-30 of the present specification.

No "new matter" has been added by the amendment.

### The 35 U.S.C. §103 Rejection

Claims 1-3 and 5-8 stand rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Wei (U.S. Pat. No. 5,435,608) in view of Kobayashi (U.S. Pat. No. 4,907,040), among which claims 1 and 2 are independent claims. The rejections are respectfully traversed.

According to M.P.E.P. §2143,

To establish a *prima facie* case of obviousness, three basic criteria must be met. First there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in the applicant's disclosure.

Furthermore, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

Claim 1, as amended, defines an X-radiation imagery device comprising at least one detection matrix made of a semiconducting material. The detection matrix comprises (a) pixels to convert incident X-photons into electric charges, (b) an electric charges reading panel including a plurality of electronic devices, each electronic device being integrated by pixel, the electric charges reading panel being a monocrystalline silicon panel, and (c) a detection layer made of a continuous layer of semiconducting material deposited in vapour phase on the electric charges reading panel, as recited in Claim 1 as amended.

In the Final Office Action, the Examiner maintains the rejection based on Wei and Kobayashi from the previous Office Action. That is, the Examiner alleges that the elements of the claimed invention are disclosed in Wei except a detection layer made of a continuous layer of semiconducting material deposited in vapor phase. The Examiner further alleges that that Kobayashi teaches the vapor deposition of a continuous layer of

semiconducting material, and thus one of ordinary skill in the art would be motivated to use the conventional vapor deposition method disclosed in Kobayashi to form a continuous layer with the invention as disclosed by Wei in order to increase the effective detection area (Final Office Action, page 4, line 21 to page 5, line 2). In addition, the Examiner refers to Jeromin (U.S. Pat. No. 5,381,014), alleging that Jeromin discloses a detector with a continuous semiconducting layer vapor deposited over a reading panel (Final Office Action, page 5, lines 3-6). However, the Applicants respectfully disagree for the reasons set forth below.

As recited above, the present invention includes a unique combination of a monocrystalline silicon panel (forming the electric charges reading panel) and a detection layer made of a continuous layer of semiconductor material deposited in vapor phase on the electric charges reading panel, as claimed in Claim 1 as amended.

Jeromin allegedly teaches a continuous detection layer **14** (FIG. 1 thereof) made of amorphous selenium, which is a semiconductor material and deposited in vapor phase (column 4, line 24 thereof). However, in Jeromin, the alleged reading panel is a dielectric substrate (panel) **15**, and there is no teaching or suggestion of using a monocrystalline silicon panel in Jeromin. More precisely, this means that the substrate of conventional reading panels such as Jeromin's is made of glass, or more broadly, dielectric material. It should be noted that dielectric material (column 3, line 9 of Jeromin) is a broader definition than glass material, but "dielectric" material doesn't include monocrystalline silicon.

As shown in Jerromin's FIG. 2 illustrating the structure of the pixel 19, electrical components required to make the alleged "plurality of electronic devices" (typically transistors, capacitors, diodes, lines and rows) are made using a Thin Film Technology, as clearly described in column 5, lines 36 to 54 of Jeromim. That is, as shown in FIG. 2 of Jeromin, the drain, source, and gate electrodes of the transistor 5 (the main component of the pixel 19), and other conductor components are made from metal layers formed and patterned on the dielectric material substrate 15. The transistor 5 uses a semiconducting material layer 6 such as hydrogenerated amorphous silicon, polycrystalline silicon, crystalline silicon, or cadmium selenide (column 5, lines 39-40 and 50-52 of Jeromin) for its channel. That is, the semiconducting material layer 6 is patterned into a very small piece for each pixel, and thus Jeromin's semiconducting material layer 6 is far from a "monocrystalline silicon panel" as recited in Claim 1.

Accordingly, although Jeromin mentions "crystalline silicon" as one of the possible materials to be used in an internal layer in of the transistor 5, it does not teach or suggest using monocrystalline silicon for the global substrate 15 to make a monocrystalline silicon panel as claimed in Claim 1. Since Jeromin's crystalline layer must be patterned into pixel components, Jeromin's crystalline layer in each pixel is not correlated with the crystalline layer of other pixels, teaching away from a panel of monocrystalline silicon. In fact, the only way to create small islands of crystalline silicon layers (one island per transistor) with the Thin Film Technology is to deposit amorphous or polycrystalline silicon, create the islands by etching (patterning), and then re-

crystallize the islands typically using a laser beam, which is far from the monocrystalline silicon panel on which a plurality of electronic devices are formed.

Furthermore, it should be noted that none of the cited references Wei and Kobayashi teaches a monocrystalline silicon panel or substrate as recited in Claim 1. Therefore, any alleged combination of Wei, Kobayashi and Jeromin neither teaches nor suggest the claimed invention as recited in Claim 1.

Claim 2, as amended, defines a process for making an X-radiation imagery device comprising at least one detection matrix made of a semiconducting material, said detection matrix comprising pixels to convert incident X-photons into electric charges, and an electric charges reading panel including a plurality of electronic devices, each electronic device being integrated by pixel. According to the claimed method, each detection matrix is obtained by vapour phase deposition of a semiconductor on the electric charges reading panel, each detecting matrix including a detection layer made of a continuous layer of semiconducting material formed on the electric charges reading panel, the electric charges reading panel being a monocrystalline silicon panel, as recited in claim 2 as amended.

Thus, claim 2 as amended, includes substantially the same distinctive features as claim 1. Thus, the arguments set forth above are equally applicable to Claim 2.

Accordingly, it is respectfully requested that the rejection of claims based on Wei, Kobayashi, and Jeromin be withdrawn. In view of the foregoing, it is respectfully asserted that the claims are now in condition for allowance.

Dependent Claims

Claims 3-6 depend from claim 2, and claims 7-8 depend from claim 1, and thus include the limitations of claims 2 and 1, respectively. The argument set forth above is equally applicable here. The base claims being allowable, the dependent claims must also be allowable at least for the same reasons.

In view of the foregoing, it is respectfully asserted that the claims are now in condition for allowance.

Conclusion

It is believed that this Amendment places the above-identified patent application into condition for allowance. Early favorable consideration of this Amendment is earnestly solicited.

If, in the opinion of the Examiner, an interview would expedite the prosecution of this application, the Examiner is invited to call the undersigned attorney at the number indicated below.

The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 50-1698.

Respectfully submitted,  
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Limited Recognition under 37 CFR §10.9(b)

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